

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for correcting the phase difference between a pixel clock of a graphics card and a sampling clock of a flat-panel display with an analog interface in a system having a flat-panel display, a graphics card and a computer, comprising:

determining an ~~optimal~~ ideal phase difference between the pixel clock of the graphics card and the sampling clock of the flat panel display; and

performing an automatic adjustment of the ~~optimal~~ ideal phase difference repeatedly during continued operation of the display to compensate for phase drift during the continued operation of the display by providing an updated ~~optimal~~ ideal phase difference.

2. (Currently amended) The method according to claim 1, wherein the automatic adjustment of the ideal phase difference is performed continuously.

3. (Currently amended) The method according to claim 1, wherein the automatic adjustment of the ideal phase difference is performed periodically.

4. (Currently amended) The method according to claim 1, wherein an ~~optimal~~ ideal phase difference adjustment necessary for an instantaneous condition of the system during continued operation of the display is determined only at individual image spots, and the determined ~~optimal~~ ideal phase difference adjustment is then applied to the entire display as the display displays images.

5. (Currently amended) The method according to claim 4, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference comprises selecting a sufficiently bright image spot and the rising edge of a video pulse of this image spot is determined, and the ~~optimal~~ ideal phase difference is adjusted such that a sampling instant for an entire image is situated approximately at the midpoint between rising and falling edges of the video pulse.

6. (Currently amended) The method according to claim 4, wherein said automatic adjustment of the ~~optimal~~ phase difference comprises determining a rising edge of a video pulse of a sufficiently bright image spot and the ~~optimal~~ ideal phase difference is adjusted such that a sampling instant is shifted by approximately half the width of an image spot toward the center of a pixel.

7. (Currently amended) The method according to claim 4, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference comprises determining a falling edge of a video pulse at a sufficiently bright image spot, and the ~~optimal~~ ideal phase difference is adjusted such that a sampling instant is shifted by approximately half the width of an image spot toward the center of a pixel.

8. (Currently amended) The method according to claim 5, wherein an image area and image spots are arrayed on the flat-panel display in rows and columns between a back-porch region and a front-porch region, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference comprises choosing an image spot in a first image column close to the back-porch region as the sufficiently bright image spot for determination of the rising edge and an image spot in the first image column close to the front-porch region is chosen as the sufficiently bright image spot for determination of the falling edge.

9. (Currently amended) The method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises measuring the brightness of a plurality of image spots of the first or last image column and choosing the image spots with the greatest brightness in the first or last image column for determination of the rising or falling edge respectively of the video pulse.

10. (Currently amended) The method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises measuring image spots $(n \times k)$ are with $n = 1, 2, \dots N$ and $k = \text{constant}$, and, if no sufficiently bright image spot is found, the image spots $(n + m) \times k$ are measured with $m = 1, 2, \dots N$, until a sufficiently bright image spot is found.

11. (Currently amended) The method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises for-determination of the amplitude values of the selected image spots, shifting the phases at these image spots until the measured amplitude values no longer change significantly, and further processing the amplitude values determined.

12. (Currently amended) The method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises advancing the phase used for determination of amplitude values sufficiently so that measured amplitude values are smaller than a predetermined limit value delaying the phase by half the width of a spot, and further processing the measured amplitude value.

13. (Currently amended) The method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises ~~for determination of determining~~ the rising edge of the selected image spots, shifting the phase at the selected image spot sufficiently toward the back-porch region so that a measured amplitude value is reduced to a predetermined percentage of a previously determined amplitude value, and storing this value of the phase temporarily as the position of the rising edge.

14. (Currently amended) A method according to claim 5, wherein said automatic adjustment of the ~~optimal~~ ideal phase difference further comprises ~~for determination of determining~~ the falling edge of the selected image spots, shifting the phase at the selected image spot sufficiently toward the front-porch region so that a measured amplitude value is reduced to a predetermined percentage a previously determined amplitude value, and storing this value of the phase temporarily as the position of the falling edge.

15. (Previously presented) A method according to claim 5, further comprising delaying the phase or sampling instant relative to the midpoint between the rising and falling edges by a predetermined amount.

16. (Currently amended) A method according to claim 1, further comprising masking pixel or pixels that is or are influenced or distorted during determining the ~~optimal~~ ideal phase difference by masking such pixel or pixels with distortion-free image fragments from a video memory.

17. (Previously presented) The method according to claim 15, further comprising repeatedly regenerating a video memory.

18. (Currently amended) The method according to claim 4, further comprising creating an offset wherein the sampling instant can be changed by a user compared with the value determined during determining the ~~optimal~~ ideal phase difference in which case said offset is used during an automatic matching.

19. (Currently amended) A device for correcting the phase difference between the pixel clock of a graphics card and the sampling clock of a flat-panel display with an analog interface in a system having a flat-panel display, a graphics card and a computer, comprising:

a processor for repeatedly determining an ~~optimal~~ ideal phase difference between a pixel clock of a graphics card and a sampling clock of a flat panel display; and

an adjusting circuit which repeatedly performs an automatic adjustment of the ~~optimal~~ ideal phase difference during the continued operation of the display to compensate for phase drift during the continued operation of the display and to provide an updated ~~optimal~~ ideal phase difference.

20. (Currently amended) The device according to claim 19, wherein the automatic adjustment of the ~~optimal~~ ideal phase difference is performed continuously or periodically.

21. (Currently amended) The device according to claim 19, wherein the adjusting circuit for adjusting the phase[[,]] further comprises a circuit containing two PLL circuits, with outputs which can be adjusted independently of one another as regards their phase.

22. (Currently amended) The device according to claim 19, wherein the adjusting circuit for shifting the phase[[,]] further comprises a PLL circuit with two clock outputs with output clock signals which can be adjusted independently of one another as regards their phase.

23. (Previously presented) The device according to claim 22, wherein the two outputs of the PLL circuit deliver a sampling clock signal for matching and a sampling signal for the entire image.

24. (Previously presented) The device according to claim 23, wherein the sampling clock is delivered alternately by the two outputs of the PLL circuit.

25. (Previously presented) The device according to claim 19, wherein the adjusting circuit is structured to make a phase adjustment necessary for the instantaneous condition of the system which is determined only at individual image spots, and by which the determined phase adjustment is then applied to the entire image.

26. (Previously presented) The device according to claim 19, wherein the adjusting circuit determines the rising edge of a video pulse of a sufficiently bright image spot, determines the falling edge of the video pulse at a sufficiently bright image spot, and the phase is adjusted such that the sampling instant is located at approximately the midpoint between the rising and the falling edges of a video pulse.

27. (Previously presented) The device according to claim 19, wherein the adjusting circuit determines the rising edge of a video pulse of a sufficiently bright image spot, and the phase is adjusted such that the sampling instant is shifted by approximately half the width of an image spot toward the center of the pixel.

28. (Previously presented) The device according to claim 19, wherein the adjusting circuit determines the falling edge of a video pulse at a sufficiently bright image spot, and the phase is adjusted such that the sampling instant is shifted by approximately half the width of an image spot toward the center of the pixel.

29. (Previously presented) The device according to claim 26, wherein a PLL circuit which is programmed such that it oscillates at an integral multiple of the needed sampling frequency, and by a downstream frequency divider, which divides the sampling frequency of the PLL circuit by a factor n , wherein n sampling signals phase-shifted by $1/n$ periods relative to one another can be generated.

30. (Previously presented) The device according to claim 29, wherein a factor $n = 2$ is used and wherein the phase difference of the PLL circuit is adjusted such that one sampling signal is in phase with one edge of the pixel, and the other sampling signal is shifted by $1/2$ pixel in its phase difference.

31. (Previously presented) The device according to claim 19, wherein the adjusting circuit for shifting the phase for determination of the sampling value of the image spot until the measured amplitude values no longer differ significantly, whereupon the sampling value determined then is further processed.

32. (Previously presented) The device according to claim 19, wherein the adjusting circuit advances the phase used for determination of the sampling value sufficiently that the measured amplitude values are smaller than a predetermined limit value, such as smaller than

50% of the sampling value, and by a device which then retards the phase by half the width of an image spot, whereupon the sampling value measured then is further processed.


33. (Previously presented) The device according to claim 19, wherein the adjusting circuit shifts the phase for determination of the rising edge sufficiently far toward a back-porch region that the measured amplitude value decreases to a predetermined percentage, such as 50% of the previously determined amplitude value, whereupon this value of the phase is stored temporarily as the position of the rising edge.

34. (Previously presented) The device according to claim 19, wherein a device which shifts the phase for determination of the falling edge sufficiently far toward the front-porch region that the measured amplitude value decreases to a predetermined percentage whereupon this value of the phase is stored temporarily as the position of the falling edge.

35. (Previously presented) The device according to claim 19, wherein the adjusting circuit uses an offset by which the sampling instant can be changed by the user compared with the value determined during matching, in which case said offset is used during automatic matching.

36. (Currently amended) The method according to claim 1, wherein when performing an automatic adjustment of the ~~optimal~~ ideal phase difference, the adjusted ~~optimal~~ ideal phase difference may be unchanged from the immediately preceding one.

37. (Currently amended) A method for correcting the phase difference between a pixel clock of a graphics card and a sampling clock of a flat-panel display with an analog



interface in a system having a flat-panel display, a graphics card and a computer, comprising:

determining an ~~optimal~~ ideal phase difference between the pixel clock of the graphics card and the sampling clock of the flat panel display;

performing an automatic adjustment of the ~~optimal~~ ideal phase difference repeatedly during continued operation of the display to compensate for phase drift during the continued operation of the display by providing an updated ~~optimal~~ ideal phase difference based on which a sampling instant for the entire image is situated approximately at a midpoint between the rising and falling edges of a video pulse.

38. (Currently amended) A method for correcting the phase difference between a pixel clock of a graphics card and a sampling clock of a flat-panel display with an analog interface in a system having a flat-panel display, a graphics card and a computer, comprising:

determining an ~~optimal~~ ideal phase difference between the pixel clock of the graphics card and the sampling clock of the flat panel display;

performing an automatic adjustment of the ~~optimal~~ ideal phase difference repeatedly during continued operation of the display to compensate for phase drift during the continued operation of the display by providing an updated ~~optimal~~ ideal phase difference;

wherein the ~~optimal~~ ideal phase difference adjustment necessary for an instantaneous condition of the system during continued operation of the display is determined only at individual image spots, and the determined ~~optimal~~ ideal phase difference adjustment is then applied to the entire display as the display displays images; and

wherein the updated ~~optimal~~ ideal phase difference is such that a sampling instant for the entire image is situated approximately at a midpoint between the rising and falling edges of a video pulse.